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IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :  
ANTON NEGELE, ET AL. : EXAMINER: REDDICK, M. L.  
SERIAL NO.: 09/830,566 :  
FILED: May 7, 2001 : GROUP ART UNIT: 1713  
FOR: AQUEOUS DISPERSIONS OF :  
WATER-SOLUBLE POLYMERS OF N-  
VINYL CARBOXAMIDES, THEIR  
PREPARATION AND THEIR USE

DECLARATION UNDER 37 C.F.R. §1.132

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

SIR:

I, Volker Braig, Dr. rer. nat., a citizen of the Federal Republic of Germany and residing at 4, In der Steig, 69469 Weinheim, Federal Republic of Germany, declare as follows:

I am a fully trained chemist, having studied chemistry at the University of Konstanz, from 1992 to 1997, and at the Technical University of Aachen, from 1997 to 2001;

I am well acquainted with technical English;

I joined BASF Aktiengesellschaft of 67056 Ludwigshafen, Federal Republic of Germany, in 2001, since when I have been working on the development of N-vinylformamide and N-vinylamine polymers.

I am familiar with the field to which the subject application relates.

I have read and understand the subject application and the Examiner's Official Action according to which the claims are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Sato et al. (U.S. 5,962,570).

Essentially, the claims of the instant application relate to an aqueous dispersion of a water-soluble polymer of N-vinylformamide and/or N-vinylacetamide, wherein the dispersion contains, based on 100 parts by weight of water

- (A) from 5 to 80 parts by weight of a water-soluble polymer containing N-vinylformamide units and/or of N-vinylacetamide units and having a particle size of from 50 nm to 2  $\mu$ m
- (B) from 1 to 50 parts by weight of at least one polymeric dispersant which is selected from the group consisting of carboxymethylcellulose, water-soluble starch, starch esters, starch xanthogenates, starch acetates, dextran, polyalkylene glycols, polyvinyl acetate, polyvinyl alcohol, polyvinylpyrrolidone, polyvinylpiperidine, polyethyleneimine, polyvinylimidazole, polyvinylsuccinimide, a 1:1 molar ratio of copolymer of N-vinylcaprolactam and N-vinylacetamide, and polydiallyldimethylammonium chloride,

the aqueous dispersion being substantially free of inorganic salt.

In a preferred embodiment of the instant application the water-soluble polymer as claimed in claim 1 will be treated with an acid or base to convert the N-vinylformamide units and/or N-vinylacetamide units of the polymer (A) to vinylamine units (claim 4).

Sato et al. relates to a process for the preparation of an aqueous solution or dispersion containing a cationic polymer, which comprises the steps of polymerizing a monomer including N-vinylcarboxylic acid amide represented by the formula  $\text{CH}_2=\text{CHNHCOR}$ , wherein R represents a hydrogen atom or methyl group, in an aqueous medium in the presence of either or both of a polyethylene glycol and polypropylene glycol; and then modifying the resulting polymer with an acid or base (claim 1, column 2, line 63 to column 3, line 5).

In order to show that the feature of particle size is not inherently disclosed by Sato et al. I have reworked Example 6 of Sato et al. identically.

I have determined the particle size three times during the procedure with a Leitz Diaplan microscope ( at a 400 fold magnification with contrast enhancement due to differential interference contrast (DIC)):

after polymerization, before addition of salt (column 10, line 39)	20 – 30 $\mu\text{m}$ ,
after addition of salt and stirring for 1 hour (column 10, line 42)	20 – 30 $\mu\text{m}$ , and
after hydrolysis (column 10, line 53)	30 – 100 $\mu\text{m}$ .

The results of the reworked Example 6 of Sato et al. in comparison with the instant invention show that the particle size is significant different. Thus, the feature of particle size is not inherently disclosed by Sato et al..

The particle size is an important parameter for polymer dispersions. The stability of such dispersions is directly dependent on the particle size. This fact is due to the rate of sediment action of the particles, which is dependent of the radius of the particles. For

example, if the particle size is halved, its rate of sediment action is reduced by a factor of four. Therefore, sedimentation is one of the key parameters for stability of a dispersion.

I further declare that all statements made herein of my own knowledge are true and all statements made on information or belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Volke R.  
Signature

03.09.2004  
Date